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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Zyskind, J. W.
Appl. No. : 09/630,931
Filed : August 2, 2000
For : CHITOBIASE AS A REPORTER
ENZYME
Examiner : Rao, M..
Group Art Unit : 1652

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The undersigned, Judith W. Zyskind, does declare and state that:

1. I am the sole named inventor of the subject matter claimed in the above-identified patent application.

2. I am familiar with the specification of the present patent application, including the methods described therein and the details of the examples that are described therein.

3. I have extensive experience in the field of microbial genetics and molecular biology as evidenced by my attached curriculum vitae (Exhibit A)

4. This Declaration is being submitted to demonstrate that the subject matter first described in the reference Kalabat, *et al.* (1998) *Biotechniques* **25**: 1030-1035, was solely conceived by me.

5. I am one of six individuals listed as a co-author of the Research Report, entitled Chitobiase, A New Reporter Enzyme, which was published in December 1998 in *Biotechniques* **25**:1030-1035 (Kalabat *et al.*).

6. My name is the last to appear in the list of co-authors that is associated with the Kalabat *et al.* article. Additionally, I am listed as the author to whom correspondence regarding this article should be addressed.

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7. The subject matter first described in the reference Kalabat, *et al.* was solely conceived by me.

8. Each of the other individuals listed as co-authors of the Kalabat *et al.* article did not contribute to the conception of the invention claimed in the subject patent application.

9. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or patent issuing therefrom.

Dated: August 26, 2003

By: Judith W. Zyskind
Judith W. Zyskind

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Curriculum Vitae

Judith W. Zyskind

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Education:

B.S., University of Dayton, Dayton, OH, 1961, Biology
M.S., Iowa State University, Ames, IA, 1964, Biology
Ph.D., Iowa State University, Ames, IA, 1968, Biology

Experience:

2001-present	Director, BioScience Center, San Diego State Univ.
2002-present	Professor Emeritus, Department of Biology, San Diego State Univ.
1986-2002	Professor, Department of Biology, San Diego State Univ.
1998-1999	Chief Scientific Officer, Elitra Pharmaceuticals, Inc.
1997	Founder, Elitra Pharmaceuticals, Inc.
1988	Sabbatical, Professor Arthur Kornberg, Stanford University
1982-86	Associate professor, Department of Biology, San Diego State Univ.
1977-82	Assistant Research Biologist, Univ. Calif., San Diego
1974-77	Postdoctoral Fellow, Biology Department, Univ. Calif., San Diego
1972-74	Postdoctoral Fellow, Biochemistry Department, Iowa State Univ.
1970-72	Lecturer in Genetics Department, Iowa State University
1969-70	Postdoctoral Fellow, Genetics Department, Iowa State Univ.
1961-68	Graduate student, Bacteriology Department, Iowa State Univ.

Honors, Membership in Societies, etc.:

Fellow of the American Academy of Microbiology
Member, Editorial Board, *Journal of Molecular Microbiology and Biotechnology*, 1998-present
Member, Board of Directors, SDSU Foundation, 1997-present
Member, Board of Directors, Elitra Pharmaceuticals, Inc., 1997-2001
Member, Scientific Advisory Board, Elitra Pharmaceuticals, Inc., 1997-present
Governing Board member, California State University Program for Education and Research in Biotechnology, 1990-2001
Co-Director, Microchemical Core Facility, SDSU, 1994-1997
Co-Director, Certificate Program in Recombinant DNA Technology, SDSU, 1985-present
The American Academy of Microbiology's Avantis Pharmaceutical Award (formerly the Hoechst Marion Roussel Award) Nominating Committee, 2000-present
Member of the American Society of Biochemistry and Molecular Biology, American Society for Microbiology, American Association for the Advancement of Science, Association for Women in Science, and Sigma Xi

Discovering Antibiotic Targets

A major human health problem in the area of infectious diseases is the alarming increase in resistance to antibiotics in bacterial pathogens, where some pathogens have become resistant to all antibiotics. Because antibiotics target the products of essential genes, screening for previously unknown essential genes can lead to the development of novel and effective antibiotic drugs. There are estimated to be at least 400 essential proteins in each bacterial species, leaving 385 unexplored proteins that could serve as targets for the development of new antibiotics. Identifying these proteins in pathogenic organisms is of great interest to the pharmaceutical industry because they encode potential antibiotic targets. Most of the approaches used currently for identifying new antibiotic targets from genomic information or genetic screening are time consuming and labor intensive. My lab discovered a novel, extremely rapid method for identifying antibiotic targets in pathogenic bacteria that uses antisense RNA to turn down protein expression. Following this discovery, commercialization of the technology led to the formation of Elitra Pharmaceuticals, Inc, <http://www.elitra.com>.

Peer-Reviewed Articles

Weaver, J. R. and Pattee, P. A. (1964) Inducible resistance to erythromycin in *Staphylococcus aureus*. *J. Bacteriol.* **88**:574-580.

Zyskind, J. W., Pattee, P. A., and Lache, M. (1965) Staphylolytic substance from a species of *Pseudomonas aeruginosa*. *Science* **157**:1458-1459.

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Imsande, J., Zyskind, J. W., and Mile, I. (1972) Regulation of Staphylococcal penicillinase synthesis. *J. Bacteriol.* **109**:122-133.

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Zyskind, J. W., Deen, L. T., and Smith D. W. (1977) Temporal sequence of events during the initiation process in *Escherichia coli* deoxyribonucleic acid replication: roles of the *dnaA* and *dnaC* gene products and ribonucleic acid polymerase. *J. Bacteriol.* **129**:1466-1475.

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Zyskind, J. W. (1998) Book review. ASM News 64:416.

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Zyskind, J. W., and Smith, D. W. (2001) Ori sequences. In Encyclopedia of Genetics, Volume 4, S. Brenner and J. Miller, eds. (Academic Press, San Diego), pp. 1381-1387.

Patents and Patent Applications

Zyskind, J. W. and Forsyth, R. A. Method for Identifying Microbial Proliferation Genes, issued May 8, 2001, U.S. Patent # 6,228,579. Abstract: A method for identifying endogenous microbial proliferation genes for growth and viability is disclosed herein. The method involves exogenous nucleic acids that are used to conditionally produce antisense inhibitors of endogenous complementary mRNAs in a microorganism. Antisense fragments that result in lethality when expressed indicate that the endogenous gene is a proliferation gene. The method can also be used with sequences in sense orientation. The strategy can be used to identify new gene targets for novel antibiotics.

Zyskind, J. W., Ohlsen, K. L., Trawick, J., Forsyth, R. A., Froelich, J. M., Carr, G. J., Yamamoto, R. T., Xu, H. H. Genes Identified as Required for Proliferation in *Escherichia coli*. International patent application Publication No. WO 00/44906.

Zyskind, J. W. Chitobiase as a Reporter Enzyme. USA patent application filed.

Zyskind, J. W. Use of Ectoenzymes and Secreted Enzymes to Monitor Cellular Proliferation. USA and PCT (International) patent applications filed.